Florida Financial Algebra

Program Overview

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This program was developed and reviewed by experienced math educators who have both academic and professional backgrounds in mathematics. This ensures: freedom from mathematical errors, grade level appropriateness, freedom from bias, and freedom from unnecessary language complexity.

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Financial Algebra Course Description

The average American with a bachelor's degree will earn about $1.8 million during his or her life, according to the Indiana University Kelley School of Business. This money must pay for taxes, housing, transportation, food, power, and countless other expenses, including those in the years after retirement. $1.8 million seems like a lot, but there is a reason that money is one of the leading causes of stress in our country. Over a lifetime, the money does not pay for as much as it would appear.

In this course, you'll learn about managing your earnings on a daily, weekly, monthly, yearly, and lifetime basis to make sure you can afford the things you need and want. You'll also see how important it is to know the math behind the money. How can you invest and save to make sure you have money for retirement? How can you determine what car to buy? Where does your money go when you pay taxes, make a bank deposit, or use a credit card? Knowing the formulas, equations, and graphs behind the answers to these questions will help you make decisions that will keep your bank account positive and your stress level negative.

Many of the equations and graphs that apply to these financial situations will be familiar. You'll see the slope-intercept form of a line as it applies to simple interest, exponential growth as it applies to bank accounts, and percentages as they apply to business commissions. Some concepts might be new, such as the matrices businesses use to solve systems of equations and determine prices, or the complicated car and mortgage payment formulas. Applying these concepts, both familiar and new, in the situations you might see throughout your life will help you see math as more than an isolated school subject.

The main question many students ask their math teachers is, "When will I ever use this?" In this course, you'll see how businesses, governments, and ordinary people can use math every day. We all use money every day, and managing your money intentionally by using the equations and concepts in this course will help you manage it effectively. Every Warm-Up, every Problem-Based Task, and most of the problems in the lessons you'll encounter directly relate to real-world financial issues you'll need to think about. Good luck, get rich, and have fun!

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PROGRAM OVERVIEW

Introduction to the Program

Introduction

The *Florida Financial Algebra Program* is a complete set of materials developed around the Mathematics Florida Standards (MAFS). Topics are built around accessible core curricula, ensuring that the *Florida Financial Algebra Program* is useful for striving students and diverse classrooms.

This program realizes the benefits of exploratory and investigative learning and employs a variety of instructional models to meet the learning needs of students with a range of abilities.

The *Florida Financial Algebra Program* includes components that support problem-based learning, instruct and coach as needed, provide practice, and assess students' skills. Instructional tools and strategies are embedded throughout.

The program includes:

- More than 150 hours of lessons, addressing the nine modules of *Florida Financial Algebra*
- Essential Questions for each instructional topic
- Vocabulary
- Instruction and Guided Practice
- Problem-based Tasks and Coaching questions
- Step-by-step graphing calculator instructions for the TI-Nspire and the TI-83/84
- Station activities to promote collaborative learning and problem-solving skills
- Financial Literacy performance tasks which include the Social Studies standards

Purpose of Materials

The *Florida Financial Algebra Program* has been organized to coordinate with the Florida Financial Algebra and Financial Literacy standards specifications from the MAFS. Each lesson includes activities that offer opportunities for exploration and investigation of mathematical content and financial literacy topics. These activities incorporate concept and skill development and guided practice, then move on to the application of new skills and concepts through financial literacy problems and tasks. Throughout the lessons and activities, problems are contextualized to enhance rigor and relevance.

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PROGRAM OVERVIEW
Introduction to the Program

This program includes all the math topics addressed in the Financial Algebra content map. These topics include:

- Introduction to Functions and Equations
- Creating, Graphing and Interpreting Linear Functions
- Systems
- Creating, Graphing and Interpreting Exponential Functions
- Polynomial Operations and Quadratic Functions
- Statistics

Financial literacy topics include:

- Automobile Ownership
- The Stock Market
- Business Modeling
- Employment
- Banking
- Consumer Credit
- Independent Living

The eight Standards for Mathematical Practice are infused throughout:

- **MAFS.K12.MP.1:** Make sense of problems and persevere in solving them.
- **MAFS.K12.MP.2:** Reason abstractly and quantitatively.
- **MAFS.K12.MP.3:** Construct viable arguments and critique the reasoning of others.
- **MAFS.K12.MP.4:** Model with mathematics.
- **MAFS.K12.MP.5:** Use appropriate tools strategically.
- **MAFS.K12.MP.6:** Attend to precision.
- **MAFS.K12.MP.7:** Look for and make use of structure.
- **MAFS.K12.MP.8:** Look for and express regularity in repeated reasoning.

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Structure of the Teacher Resource

The *Florida Financial Algebra Program* is provided in an online, digital format, and/or in hard copy (Program Overview and nine module volumes). The materials, either online or hard copy, are completely reproducible. Online materials can be provided in your Learning Management System (such as Canvas or Schoolology) or in Walch's proprietary system, WalchConnect. The nested folder organization in WalchConnect allows you to access the materials quickly and easily. The digital format also facilitates printing and copying student pages and/or making assignments online.

The Program Overview is the first section. This section helps you to navigate the materials, offers a collection of graphic organizers and suggested strategies for their use, and shows the correlation between the MAFS for Mathematics and the Financial Algebra course description.

The remaining materials focus on content, knowledge, and application of the nine modules in the Financial Algebra curriculum: Automobile Ownership; The Stock Market; Business Modeling; Employment; Banking; Consumer Credit; Independent Living: Taxes; Independent Living: Planning for Retirement; and Independent Living: Budgeting. The modules in the *Financial Algebra Program* are designed to be flexible so that you can mix and match activities as the needs of your students and your instructional style dictate.

Each module includes a pre-assessment, progress assessment, and an end-of-module assessment. These enable you to gauge how well students have understood the material as you move from lesson to lesson and to differentiate as appropriate.

Glossary

The Glossary contains vocabulary terms and formulas from throughout the program, organized alphabetically. Each listing provides the term and the definition in both English and Spanish. The listings include the lesson number(s) where the terms can be found in the Words to Know.

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Module Structure

All of the instructional modules have common features. Each module begins with a list of all the standards addressed in the lessons; Essential Questions; vocabulary (titled "Words to Know"); a list of recommended websites to be used as additional resources, and one or more conceptual activities.

Each lesson begins with a list of identified prerequisite skills that students need to have mastered in order to be successful with the new material in the upcoming lesson. This is followed by an introduction, key concepts, common errors/misconceptions, guided practice examples, a problem-based task with coaching questions and sample responses, a closure activity, and practice. Each lesson ends with a progress assessment to evaluate students' learning.

All of the components are described below and on the following pages for your reference.

Mathematics Florida Standards for the Module

All standards that are addressed in the entire module are listed.

Essential Questions

These are intended to guide students' thinking as they proceed through the lesson. By the end of each lesson, students should be able to respond to the questions.

Words to Know

A list of vocabulary terms that appear in the module are provided as background information for instruction or to review key concepts that are addressed in the lesson. Each term is followed by a numerical reference to the first lesson in which the term is defined.

Recommended Resources

This is a list of websites that can be used as additional resources. Some websites are games; others provide additional examples and/or explanations. The links for these resources are live in the PDF version of the Teacher Resource. (*Note*: These website links will be monitored and repaired or replaced as necessary.)

Conceptual Activities

In an effort to build conceptual understanding of mathematical ideas and to provide more than isolated facts and procedures, links to interactive open education and Desmos resources are included. (*Note*: These website links will be monitored and repaired or replaced as necessary.)

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Warm-Up

Each warm-up takes approximately 5 minutes and addresses either prerequisite and critical-thinking skills or previously taught math concepts.

Warm-Up Debrief

Each debrief provides the answers to the warm-up questions, and offers suggestions for situations in which students might have difficulties. A section titled Connection to the Lesson is also included in the debrief to help answer students' questions about the relevance of the particular warm-up activity to the upcoming instruction. Warm-Ups with debriefs are also provided in PowerPoint presentations with short video clips to enhance engagement.

Identified Prerequisite Skills

Presented at the beginning of each lesson, this list cites the skills necessary to be successful with the new material.

Introduction

This brief paragraph gives a description of the concepts about to be presented and often contains some Words to Know.

Key Concepts

Provided in bulleted form, this instruction highlights the important ideas and/or processes for meeting the standard.

Common Errors/Misconceptions

This is a list of the common errors students make when applying Key Concepts. This list suggests what to watch for when students arrive at an incorrect answer or are struggling with solving the problems.

Guided Practice

This section provides step-by-step examples of applying the Key Concepts. The three to five examples are intended to aid during initial instruction, but are also for individuals needing additional instruction and/or for use during review and test preparation. Links to GeoGebra applets that model selected Guided Practice examples are provided on the flash drive that accompanies this program.

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Problem-Based Task

This activity can serve as the centerpiece of a problem-based lesson, or it can be used to walk students through the application of the standard, prior to traditional instruction or at the end of instruction. The task makes use of critical-thinking skills.

Optional Problem-Based Task Coaching Questions

These questions scaffold the task and guide students to solving the problem(s) presented in the task. They should be used at the discretion of the teacher for students requiring additional support.

Problem-Based Task Coaching Questions Sample Responses

These are the answers and suggested appropriate responses to the coaching questions. In some cases answers may vary, but a sample answer is given for each question.

Recommended Closure Activity

Students are given the opportunity to synthesize and reflect on the lesson through a journal entry or discussion of one or more of the Essential Questions.

Practice

Each lesson includes two sets of practice problems to support students' achievement of the learning objectives. These sheets are written for the student. They can be used in any combination of teacher-led instruction, cooperative learning, or independent application of knowledge.

Mid-Module and End-of-Module Assessments

A mid-module assessment and two end-of-module assessments (forms A and B) offer multiple-choice questions and extended-response questions that incorporate critical thinking and writing components. These can be used to document the extent to which students grasped the concepts and skills of each module.

Answer Key

Answers for all of the Warm-Ups, practice problems, and assessments are provided at the end of each module.

Graphing Calculators

Step-by-step instructions for using a TI-Nspire and a TI-83/84 are provided whenever graphing calculators are referenced.

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